



Oregon

Kate Brown, Governor

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August 25, 2015

Stuart Dearden
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Route 202-206
P.O. Box 6800
Bridgewater, NJ 08807-0800

Re: DEQ Review "Off-Property Screening Level Human Health Risk Evaluation Former Rhone-Poulenc Portland Site"

Rhône-Poulenc Site –Portland Site

ECSI 155

Dear Mr. Dearden:

The Department of Environmental Quality (DEQ) has completed our review of the October 7, 2013 *Off-Property Screening Level Human Health Risk Evaluation - Rhône-Poulenc Site - Portland Site*, prepared for StarLink Logistics Inc. (StarLink) by Golder Associates. Thank you for that submittal.

We understand that the submittal was prepared with the intent to screen chemicals of interest (COIs) in order to determine applicable chemicals of concerns (COCs) to be carried forward into the feasibility study (FS) for the Rhone Poulenc site (the Site) without producing a baseline risk assessment for the off-property portion of the Site, if possible. Considering our mutual desire to begin the FS phase of the project without further delay, please revise the screening assessment to incorporate the following general and specific comments. Also, please address the attached EPA review comments as part of the revised submittal, and resubmit a revised screening evaluation for the off-property portion of the Site to DEQ within 60 days.

General Comments

The *Off-Property Screening Level Human Health Risk Evaluation* inappropriately screens out some COCs, and does not adequately evaluate all of the off-property pathways for both soil, and groundwater.

For off-property groundwater, the submittal incorrectly screened COIs by:

- eliminating constituents based on the inappropriate use of low frequency of detection methodology,
- eliminating constituents that exceeded conservative SLVs (i.e., EPA tap water RSLs),
- eliminating pre-2007 organochlorine insecticides and dioxin/furans data from the assessment, and
- excluding data from a number of off-property groundwater monitoring wells within the Site's locality of facility (LOF) from the screening process.

For both off-property soil and groundwater, the submittal does not adequately address whether the data evaluated is representative of site conditions that could contribute to risk. For example, limited sampling was conducted in surface soil surrounding the southeast and southwest property boundary. Also limited subsurface samples were collected in the former Doane Lake area where sediment may potentially be present at depths less than 15 feet from ground surface. A data completeness evaluation must be included as part of the revised report to address this issue.

In addition, the revised submittal must clearly identify all COCs for each pathway that will be carried into the FS.

Specific Comments

1. **Page 2, Section 1.0 Conceptual Site Model.** Construction worker must be added to the potential future receptor list.
2. **Page 2, Section 1.0 Conceptual Site Model.** The submittal must clearly explain how the screening assessment integrates with the risk evaluations for the on-property area of the Site. It must clearly identify what portion of the Site is being addressed and what portion is not. The LOF as presented by DEQ in the *Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report*¹ must be addressed, and a discussion of areas that are excluded from evaluation should be presented. For example, the groundwater to surface water pathway is not discussed in the off-property screening because the pathway is being addressed through a separate source control evaluation process. Areas excluded from this assessment within the LOF (such as North Doane Lake, the historical drainage ditch, and the off-property surface soil to the southeast and southwest property boundary) must be documented with an explanation of how and when they will be addressed.
3. **Page 2, Section 1.0 Conceptual Site Model.** The surface soil pathway is not discussed and must be included in the conceptual site model (CSM). Specifically, surface soil adjacent to the Rhone-Poulenc property boundary must be included in the screening assessment (see Specific Comment 4). If it remains excluded from a revised screening, the assessment must document how and when this portion of the Site will be addressed.
4. **Page 2, Section 1.1 Former Doane Lake Sediment.** The conclusion that there are no former Doane Lake sediments located within 15 feet below ground surface (bgs) is inconsistent with DEQ's conclusions, as presented in the *Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report*.

DEQ specifically addressed this issue on Page 45, Specific Comment 28 of the *Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report*. DEQ stated the following:

The memo does adequately present the available [former Doane Lake] data. Identified potential exposure pathways include: direct contact with soil, direct contact with groundwater and groundwater migration off site. It did not include the vapor transport pathway which will also need to be included in the Rhone-Poulenc off-site human health risk assessment. The memo states that East Doane Lake sediments were removed as part of the NL/Gould remedy, and no longer represent a source of potential exposure to receptors. Not all of East Doane Lake sediments were removed. A portion of the lake that was fill by Schnitzer/Air Liquide was not addressed as part of the NL/Gould remedy and represents a source of potential exposure to receptors that will need to be evaluated as part of the Rhone-Poulenc off-site human health risk assessment. The memo does not specifically address the ESCO, North Front Avenue or City Pump station portion of the former Doane Lake. StarLink's conclusion that material discharged to the lake from the Rhone-Poulenc property would have settled out nearer to discharge points and that only more soluble constituents may have been transported through the water to any significant extent is not sufficiently supported and is not supported by the available analytical data. The co-location

¹ (DEQ 2015). *Rhone-Poulenc Remedial Investigation Report: Addendum-RI/SCE Report* (November 19, 2010). Oregon Department Of Environmental Quality. April 2015.

of numerous Rhone-Poulenc contaminants in all former Doane Lake sediment samples suggests that dispersion of Rhone-Poulenc contaminants was wide spread throughout the lake. In addition to the vapor intrusion pathway across the entire former Doane Lake area, the Rhone-Poulenc off-site human health risk assessment will need to address all areas of former Doane Lake sediment that are less than 15 feet below ground surface. While the memo does not delineate this area; it appears that these locations are mostly limited to the Schnitzer/Air Liquide property where sediment removal did not occur and former shoreline along Northwest Front Avenue, particularly in the vicinity of the City Pump Station. Limited sediment data has been collected in these areas. This is a potential data gap that may need to be addressed in order to complete the off-site human health risk assessment.

The revised assessment must address direct contact of former Doane Lake sediment to excavation and construction workers via established exposure scenarios. Because there is limited data in the identified areas, StarLink must screen representative data from former Doane Lake sediment. DEQ has determined that the samples collected from the East Doane Lake portion of the lake and the soil sample collected from RP-26 at 35 to 37 feet bgs are most representative of the Schnitzer/Air Liquide property, City Pump Station area, and former shoreline along Northwest Front Avenue. Conclusions based on this data will need to be confirmed as part of the FS by collecting verification samples in the area of the City Pump Station, Northwest Front Avenue, and Schnitzer/Air Liquide property.

Table 1 presents an initial screening of this data. Results from this screening indicate 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 2,3,7,8-TCDF, arsenic, lead and total PCBs exceed their respective screening level value and must be carried forward into the FS as COCs.

StarLink must confirm this screening and present it in the revised assessment.

5. **Page 3, Section 1.2 Shallow Groundwater.** DEQ considers the incidental ingestion of shallow groundwater by excavation and construction workers pathway to be insignificant and therefore, does not need further evaluation. Groundwater RBCs for excavation and construction workers do not include incidental ingestion and are appropriate to use in this assessment.
6. **Page 3, Section 1.3 ACG-CRBG [Alluvial/Colluvial Gravel-Columbia River Basalt Group] Groundwater.** EPA recently added dermal contact with water as an exposure pathway to their regional screening level values for tap water. However, at this time DEQ has not updated the RBC for this pathway, so the applicable RBCs for this groundwater exposure pathway are for ingestion and inhalation only.
7. **Page 3, Section 3.0 Identification and Evaluation of Constituents of Interest.** The revised assessment needs to present screening of all COIs by receptor and pathway. A summary screening table for each receptor/pathway combination should be presented in the revised submittal. DEQ has identified the following receptors to be included in this section:
 - 1) Receptor – Excavation Worker (see attached Table 1)
 - Media – Soil (0 to 15 feet bgs).
 - Exposure Route – Ingestion, dermal contact, and inhalation.
 - Screening Value – DEQ RBCs (soil ingestion, dermal contact, and inhalation) Excavation worker. If not available, then a surrogate or EPA RSL for industrial soil should be used. See attached Table 1.

- 2) Receptor – Construction Worker (see attached Table 1)
 - Media – Soil (0 to 15 ft bgs).
 - Exposure Route – Ingestion, dermal contact, and inhalation.
 - Screening Value – DEQ RBCss (soil ingestion, dermal contact, and inhalation) Construction Worker. If not available, then a surrogate or EPA RSL for industrial soil should be used. See attached Table 1.
- 3) Receptor – Excavation/Construction worker
 - Media -Shallow Groundwater (0 to 15 ft bgs).
 - Exposure Route – Dermal contact and inhalation.
 - Screening Value – DEQ RBCwe (groundwater in excavation) Construction & Excavation Workers. If not available, then a surrogate or more conservative screening value such as DEQ RBCtw (ingestion & inhalation from tap water) or EPA RSL for tap water should be used.
- 4) Receptor – Outdoor Occupational Worker
 - Media – Shallow Groundwater (first screen).
 - Exposure Route – Inhalation of outdoor air.
 - Screening value – DEQ RBCwo (volatilization to outdoor air) Occupational. If not available then a surrogate or more conservative screening value such as DEQ RBCtw (ingestion & inhalation from tap water) or EPA RSL for residential tap water should be used.
- 5) Receptor – Indoor Occupational Worker
 - Media – Shallow Groundwater (first screen).
 - Exposure Route – Inhalation of indoor air.
 - Screening value - DEQ RBCwi (vapor intrusion into buildings) Occupational. If not available then a surrogate or more conservative screening value such as DEQ RBCtw (ingestion & inhalation from tap water) or EPA RSL for residential tap water should be used.
- 6) Receptor – Indoor Occupational Worker
 - Media – ACG-CRBG Groundwater
 - Exposure Route – Inhalation and direct contact
 - Screening value – DEQ RBCtw (ingestion & inhalation from tap water) Occupational. If not available then a surrogate or more conservative screening value such as EPA RSL for tap water should be used.

StarLink must confirm these receptor/pathway combinations and present them in the revised submittal.

8. **Page 4, Section 3.0 Identification and Evaluation of Constituents of Interest.** A summary table of all the relevant RBCs and RSLs for each COI must be presented in the revised submittal (example provided). There appears to be errors in identification of appropriate RBCs. For example, the EPA RSL for tap water was used to screen methylene chloride when DEQ RBCs for the applicable methylene chloride pathways are available.

Constituent of Interest	Max Detection (µg/L)	Groundwater RBC Volatilization to Outdoor Air-Occupational (µg/L)	Groundwater RBC Vapor Intrusion into Buildings-Occupational (µg/L)	Groundwater RBC GW in Excavation-Construction and Excavation Worker (µg/L)	Is the screening level exceeded?
Methylene Chloride (dichloromethane)	26.4	330,000	99,000	51	No

9. **Page 4, Sections 3.0 Identification and Evaluation of Constituents of Interest.** It appears that when evaluating RBCs, StarLink concludes that an RBC is not available when a groundwater RBC exceeds the solubility limit (as denoted by the >S footnote on DEQ's RBC tables). In some cases this approach resulted in using the EPA RSL for tap water as a screening value, which is incorrect. The revised report must address this mistake. See the example for Chrysene below:

Constituent of Interest	Max Detection (µg/L)	Groundwater RBC Volatilization to Outdoor Air-Occupational (µg/L)	Groundwater RBC Vapor Intrusion into Buildings-Occupational (µg/L)	Groundwater RBC GW in Excavation-Construction and Excavation Worker (µg/L)	Is the screening level exceeded?
Chrysene	4.3 ppb	>S	>S	>S	No

10. **Page 5, Section 3.0 Identification and Evaluation of Constituents of Interest.** DEQ guidance does not require that screening level evaluations use maximum concentrations as the only screening criteria. Screening should use the maximum concentration, or when sufficient data adequately representing the site is available, screening should use the 90 percent upper confidence limit on the arithmetic mean. Using the maximum concentration is the easiest approach; site-wide estimates of contaminant concentrations may not be representative of contaminant concentrations beneath buildings or in wells used for water production for the vapor intrusion and groundwater use pathways, so using the maximum concentration avoids a more sophisticated evaluation of data.

11. **Page 6, Section 3.0 Identification and Evaluation of Constituents of Interest-Low Frequency of Detection.** It is incorrect to use low frequency of detection alone to screen out a COI. As provided in DEQ guidance, low frequency of detection is used to help identify errors such as laboratory contamination of samples. An identification of the errors and a justification for omitting chemicals must be provided. DEQ identified the following COIs that were incorrectly screened out using this approach in shallow ground water:

- 2,4-Dinitrophenol
- 2-Methyl-4,6-Dinitrophenol
- Indeon (1,2,3-cd) pyrene
- Isobutyl Alcohol
- n-Nitrosodimethylaniline
- Hexachlorobutadiene
- Methylene Chloride

DEQ identified the following COIs that were incorrectly screened out in deep groundwater:

- Residual-Range Organics
- 2,4-DB
- Aldrin
- 1,2,3,4,6,7,8-HpCDD
- 1,2,3,6,7,8-HxCDD
- 1,2,3,6,7,8-HxCDF
- 1,2,3,7,8,9-HxCDF
- 1,2,3,7,8-PeCDD
- 2,3,4,6,7,8-HxCDF
- 2,3,4,7,8-PeCDF
- 2,6-Dichlorophenol
- Naphthalene
- 1,2,3-Trichlorobenzene
- 1,2,4-Trichlorobenzene
- Acetone
- Bromomethane
- Hexachlorobutadiene
- Iodomethane

These COIs must be carried into the FS as COCs. Please confirm this screening and present it in the revised assessment.

12. **Page 6, Section 3.0 Identification and Evaluation of Constituents of Interest.** Pre-2007 OCI and PCDD/F data were incorrectly excluded from selection of COCs. The pre-2007 data must be included in the selection of COCs, along with a discussion of any associated uncertainties. DEQ identified the following COIs that were incorrectly screened out in shallow ground water:

- Aldrin
- Dieldrin
- Heptachlor Epoxide
- 2,3,7,8-TCDD

DEQ identified the following COIs that were incorrectly screened out in deep ground water:

- alpha-BHC
- gamma-Chlordane
- Heptachlor Epoxide
- 2,3,4,7,8-PeCDF
- 2,3,7,8-TCDD
- 2,3,7,8-TCDF

13. Page 6, Section 3.0 Identification and Evaluation of Constituents of Interest-Screening From Residential Screening Values.

COIs exceeding residential screening criteria were incorrectly excluded from the selection of COCs. Residential screening criteria were only used in cases where occupational screening criteria were not identified. COIs that exceed residential screening criteria, in cases where an occupational screening criteria was not identified must be included in the selection of COCs. DEQ identified the following COIs that were incorrectly screened out in shallow ground water:

- 2,4,5-T
- MCP
- Aluminum
- Antimony
- Boron
- Cobalt
- Iron
- Molybdenum
- Nitrite
- Phosphorus
- Vanadium
- 2,3-Dichlorophenol
- 2,4-Dimethylphenol
- 2,6-Dichlorophenol
- 2-Chlorophenol
- 4,6-Dichloro-o-cresol
- 4-Chlorophenol
- Benzo(k)Fluoranthene
- Bis(2-Chloroethyl)ether
- Bis(2-chloroisopropyl)ether
- Chrysene
- N-Propylbenzene

DEQ identified the following COIs that were incorrectly screened out in deep groundwater:

- Diesel-Range Organics
- 2,4,5-TP (Silvex)
- MCP
- Aluminum
- Antimony
- Cobalt
- Iron
- Molybdenum

- Selenium
 - Thallium
 - Vanadium
14. **Page 9, Section 6.0 Summary and Next Steps.** COIs exceeding screening level values must be identified as COCs to be carried into the FS.
15. **Page 9, Section 6.0 Summary and Next Steps.** Conclusions must summarize all COCs for all receptor/pathways, and clearly state that they will be carried into the FS.
16. **Figure 1. Preliminary Off-Property Conceptual Site Model.** Contaminated groundwater at depths greater than 15 feet bgs may be a source for vapor transport to outdoor or indoor air. Therefore, inhalation of outdoor and indoor air by occupational workers are considered complete pathways. The first screen groundwater data for volatile chemicals within the LOF must be screened using RBCwo and RBCwi values. See Specific Comment 17 below.
17. **Figures 2 and 3.** The rationale for the monitoring wells selected in the risk screening is not clear. All shallow groundwater data from wells located outside of the property boundaries and within the LOF should be screened. COI screening at wells within the LOF can be limited consistent with the constituent extent maps presented by DEQ in the *Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report*.
18. **Tables.** Summary tables, presenting all of the soil and groundwater data, are not provided so it is not possible to confirm the statistical evaluations presented in the submittal. All data must be presented so that the statistical evaluations can be confirmed.
19. **Table 1. Summary of Off-Property Wells.** The shallow groundwater monitoring well list needs to be expanded to include all monitoring wells within the LOF and within the Rhone-Poulenc monitoring well network (i.e. monitoring wells sampled as part of the Rhone-Poulenc Site investigation). DEQ has identified additional wells to be included in the screening assessment, below. Sampling results from the first screened interval at all monitoring well locations must be screened. If depth to groundwater is greater than 15 ft bgs, the well location can be excluded from the excavation/construction worker pathway but not from the inhalation of outdoor and indoor air. The screening of individual COIs at each well location can be limited consistent with the extent maps presented in Appendix A of the *Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report*. StarLink must confirm and incorporate these wells into the revised report.
- PZ1-11
 - ASW-01
 - ASW-03
 - ASW-02
 - W-010S(21)
 - W-02-S
 - MWA-73
 - MWA-72
 - MWA-71
 - RP-10-30
 - RP-26-39
 - RP-01-31 (depth to groundwater >15 ft bgs)
 - RP-08-23
 - RP-09-35 (depth to groundwater >15 ft bgs)

- RP-14-11 (depth to groundwater >15 ft bgs)
- RP-02-31 (depth to groundwater >15 ft bgs)
- RP-13-11
- RP-12-11
- MW-07-S(41)
- RP-03-30R
- RP-03-26
- MW-06-S(31)
- RP-25(30)
- MW-030S(27)
- RP-20-25
- RP-21-28
- RP-06-30
- RP-23-30
- RP-22-29
- RP-24-30 (depth to groundwater >15 ft bgs)
- RP-07-30 (depth to groundwater >15 ft bgs)
- RP-11-30 (depth to groundwater >15 ft bgs)

20. **Table 1. Summary of Off-Property Wells.** The ACB/CRBG groundwater monitoring well list must be expanded to include all monitoring wells within the LOF and within the Rhone-Poulenc monitoring well network (i.e. monitoring wells sampled as part of the Rhone-Poulenc Site investigation). The screening of individual COIs at each well location can be limited based on the extent maps presented in Appendix A of the *Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report*. DEQ's review has identified the following well locations; StarLink must confirm and incorporate these wells into the revised submittal.

- BST1W-88
- RP-10-97
- RP-09-64
- RP-14-39
- RP-20-110
- RP-11-216

21. **Table 4. Data Summary with Individual and Cumulative Screening Results-Shallow Groundwater.** For clarity, include the reference to footnote 1 with the PCDD/PCDF congeners and dioxin-like PCB congeners.

22. **Table 4. Data Summary with Individual and Cumulative Screening Results-Shallow Groundwater.** RBCwi information is available for chemicals with footnotes e and f. These include acenaphthene, benzo[k]fluoranthene, chrysene, and fluorene. For occupational exposure, the RBDM note of >S indicates that the chemicals are not a threat to indoor air even at the solubility limit, and the RBC is above this limit. The revised screening must take this into account.

DEQ appreciates the work conducted by StarLink to prepare the submittal. Please feel free to contact me at 503 229-6748 if you have any questions.

August 25, 2015

Sincerely,

A handwritten signature in black ink, appearing to read 'Scott Manzano', with a stylized flourish at the end.

Scott Manzano, Project Manager
DEQ Northwest Region Cleanup Program

cc: Joan Underwood, Quantum Management Group
Ken Angelos, Golder Associates
Jim Benedict, Cable, Huston, Benedict, Haagensen & Lloyd
Keith Johnson, DEQ NWR
Sean Sheldrake, EPA
File

Attachments: Attachment 1: EPA's Comments Off-Property Screening Level Human Health Risk
Evaluation for the Former Rhone Poulenc-Portland Site
Attachment 2: Table 1 Excavation/Construction Worker Scenario Screening

Attachment 1

**EPA Review of Off-Property Screening Level Human Health Risk
Evaluation for the Former Rhone Poulenc-Portland Site**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
OREGON OPERATIONS OFFICE
805 SW Broadway, Suite 500
Portland, Oregon 97205

December 4, 2013

Mr. Dave Lacey
Oregon Department of Environmental Quality
Northwest Region Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201

RE: EPA Review of Off-Property Screening Level Human Health Risk Evaluation for the Former Rhone Poulenc - Portland Site (November 19, 2010)

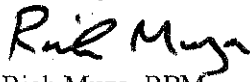
Dear Mr. Lacey:

The Environmental Protection Agency (EPA) has completed its review of the subject report. We have attached for your consideration and use general and specific review comments developed by EPA and its contractor CDM Smith.

EPA's reviews have identified a number of issues with the screening level human health risk evaluation. EPA and CDM Smith are available to meet with you at your convenience to discuss these comments and recommendations.

Please feel free to contact me at 503-326-6554 or muza.richard@epa.gov regarding any questions that you might have on EPA's review of the Off-Property Screening Level Human Health Risk Evaluation for the Rhone Poulenc - Portland Site.

Sincerely,


Rich Muza, RPM

Attachment

**Review Comments on the Off-Property Screening Level Human Health Risk Evaluation
Former Rhone Poulenc Portland Site, ECSI #155
Report Dated October 7, 2013**

General Comments:

1. The report does not address, or even cite, an analysis of representativeness of data. If data are not representative, screening of chemicals of interest (COI) is not meaningful. In particular, it is difficult to accept conclusions that suggest that COI concentrations in single wells represent the extent of contamination. Flow pathways and extent of contamination need to be considered in evaluating representativeness and subsequently the results of the screening analysis.
2. Data used to justify the conclusion that soil/sediment is not present above 15 feet below ground surface (bgs) at Doane Lake are not provided. If no soil or sediment is present, the report should identify what does exist between the surface and 15ft. bgs. Significant conclusions need to be clearly explained and fully supported and the report should provide such information necessary to do so.
3. Screening for possible impacts of vapor intrusion was not addressed in the report. These impacts may be more important than ingestion risks in some instances. For example, 5 ug/L vinyl chloride could be an issue when present at 10 to 15 feet bgs in shallow groundwater (Table 4). TCE in particular deserves special attention for this pathway. The report should be revised to address vapor intrusion.
4. Pre-2007 data should not be excluded without a complete comparative analysis. The report assumes that false positives have significantly affected data. Convincing evidence needs to be developed from analysis of data sets to support that significant bias exists in the data and for a wide range of COI. Without such information, these data should be deemed useful and incorporated into conclusions of the report. Only after identifying the effects and contribution to risk should the uncertainties of potential data bias be discussed. The objective of a risk evaluation is to assure risks are not underestimated; therefore, use of the full data set is important to this objective.
5. EPA disagrees with using screening numbers alone as a means to eliminate a COI from further consideration. If a screening level assessment reveals a potential problem, then the whole site should be further evaluated in a more complete manner.
6. Unsupported conclusions on source attribution (e.g., top of page 7) are not reviewed or accepted by EPA and are not considered useful for the HHRE.
7. As part of a Superfund site, remediation needs will be determined by the lead agency irregardless of remarks to the contrary in this report.

Specific Comments

- 1) Page 1 -- A definition for the "Locality of the Facility" would be welcome along with reference to and/or specific description of how this is in conformance with OAR 340-122-115(34). In addition, a depiction of the area on Figures 2 and 3 would provide significant value to the document.
Furthermore:
 - i) Please describe the selection of soil and groundwater depths for consideration.

- ii) Bullets do not include identifying appropriate sediment data set for screening, implying that identification of sediment as a medium of concern was ignored later in the report.
 - iii) For the eighth bullet, it is not clear what eliminating "sample date" means or which tap water criteria are and are not applicable. Please make this bullet understandable.
- 2) Section 1.0, Page 2, second to last paragraph -- All bioaccumulative chemicals (e.g., chlorinated pesticides other than DDT/DDE/DDD) should be evaluated, if present, for exposure of breast feeding infant.
 - 3) Section 1.1, Page 2 -- SLI should explain why sediments within 15 feet of the surface were identified initially if none exist.
 - 4) Section 2, Page 3, last sentence -- The text indicates that both primary and duplicate results were evaluated but does not explain how the evaluation was performed. Some evaluation methods may not be appropriate.
 - 5) Section 3, Page 4 -- Simple screening values as used here do not account for bioaccumulation and the increased dose via breastfeeding for persistent chlorinated organics. So even given the perfunctory nature of the screening process, that pathway was not adequately evaluated.
 - 6) Section 3, Page 4 -- The text suggests that all tap water screening criteria will be protective for indoor workers. This is likely not the case when considering vapor intrusion. Vapor intrusion was not considered in the HHRE, although it could be the most important exposure pathway for some chemicals.
 - 7) Section 3, Page 5 -- Screening criteria for 2,3,7,8-TCDD should be compared to maximum total TCDD equivalents, rather than congener-by-congener. Congeners are always released as groups of chemicals, not as individual chemicals. The same holds true for carcinogenic PAHs. A screening for exposure to multiple carcinogens should be included in the analysis.
 - 8) Section 3, Page 5 -- Per EPA policy, metals do not get excluded from the risk assessment based on a comparison to background.
 - 9) Section 4.0, Page 6 -- The text indicates that the report includes conclusions about non-RP sources of chemicals. Source attribution is not the purpose of the document and no conclusions reached concerning sources are either reviewed nor accepted by EPA.
 - 10) Section 4.1, Page 6 -- COI for 2,3,7,8 TCDD should be TCDD equivalents. Likewise, COI for carcinogenic PAHs should be evaluated as BaP equivalents.
 - 11) Section 4.2, Page 7 -- Dioxin/furan congeners are again inappropriately considered as individual chemicals. Under the first bullet, the detection frequency is misleading. These data apparently represent the same well sampled multiple times. Depending on source and groundwater flow, some wells are likely to be outside the possible influence of any release and thus artificially deflate FOD. A more thoughtful analysis should be included.
 - 12) Section 5.0, Page 8, Second bullet -- The text implies that groundwater attenuation has to occur. Unless data are available to demonstrate that no continuing releases exist, this statement cannot be accepted. Under the last bullet, third party impacts, if any, are not an uncertainty. Contamination is either present or it is not; the source is immaterial to the evaluation of risk.
 - 13) Section 6, Page 9 -- The last paragraph suggesting that consideration of sources will or may guide remediation is not acceptable. Remedial decisions and risk management are the role of the lead

agency and will be determined through the regulatory process regardless of remarks to the contrary in this report.

Attachment 2

Table 1 Excavation/Construction Worker Scenario Screening

Table 1

Excavation/Construction Worker Scenario Screening
 Rhone-Poulenc Off-Property Human Health Risk Assessment

Rhone-Poulenc Constituent of Interest	Maximum East Doane Lake Sediment Detection ¹	Soil Sample Results for RP-26 at 35 to 37 ft bgs ¹	RBC _{soil} ⁻ Construction Worker	RBC _{soil} ⁻ Excavation Worker	EPA RSL-Industrial Soil	SLV Exceed (Y/N)	Surrogate
Volatile Organic Compounds (mg/kg)							
1,2,3-Trichlorobenzene	NT	0.595	NA	NA	930	No	
1,2,4-Trichlorobenzene	NT	0.17	NA	NA	110	No	
1,2,4-Trimethylbenzene	NT	0.921	2,000	54,000		No	
1,2-Dichlorobenzene	3.3	5.8	19,000	520,000		No	
1,3,5-Trimethylbenzene	NT	0.322	3,100	86,000		No	
1,3-Dichlorobenzene	0.38	0.244	19000 ³	520000 ³		No	1,2-Dichlorobenzene
1,4-Dichlorobenzene	1	1.24	1,200	34,000		No	
2-Ethyl-hexanol	3.7	ND	NA	NA	47,000	No	
4-Isopropyltoluene	NT	0.829	24,000 ⁴	670,000 ⁴		No	Isopropylbenzene
Benzene	0.11	0.403	340	9,500		No	
Chlorobenzene	0.8	0.153	4,300	120,000		No	
cis-1,2-Dichloroethene	0.004	ND	620	17,000		No	
Dichlorodifluoromethane	0.23	ND	NA	NA	370	No	
Ethylbenzene	0.007	0.22	1,600	44,000		No	
Isopropylbenzene (Cumene)	NT	0.0712	24,000	670,000		No	
m,p-Xylene	0.025	0.876	19,000	540,000		No	
Methylene Chloride	0.29	ND	NA	NA	1,000	No	
n-Butylbenzene	NT	0.166	NA	NA	58,000	No	
n-Propylbenzene	NT	0.171	24,000	670,000		No	
o-Xylene	NT	0.279	19,000	540,000		No	
sec-Butylbenzene	NT	0.0888	NA	NA	120,000	No	
tert-Butylbenzene	NT	0.024	NA	NA	120,000	No	
Toluene	0.025	0.936	24,000	680,000		No	
Trichloroethene	0.0096	ND	120	3,400		No	
Xylene (Total)	0.48	NT	19,000	540,000		No	
Semivolatile Organic Compounds (mg/kg)							
1,2,4-Trichlorobenzene	NT	0.49	NA	NA	110	No	
1,2-Dichlorobenzene	NT	16	19,000	520,000		No	
1,3-Dichlorobenzene	NT	0.59	19000 ³	520000 ³		No	1,2-Dichlorobenzene
1,4-Dichlorobenzene	NT	3.1	1,200	34,000		No	
2,4,6-Trichlorophenol	2.1	ND	240	6,600		No	
2,4-Dichlorophenol	9.8	0.76	NA	NA	2,500	No	
2,4-Dimethylphenol	3.9	ND	NA	NA	16,000	No	
2,4-Dinitrophenol	4.9	ND	NA	NA	1,600	No	
2,6-Dichlorophenol	2.6	ND	NA	NA	2,500 ⁵	No	2,4-Dichlorophenol
2-Chlorophenol	2.1	0.24	NA	NA	5,800	No	
2-Methylphenol	ND	6.1	NA	NA	41,000	No	
2-Nitrophenol	0.22	ND	NA	NA	1,600 ⁶	No	2,4-Dinitrophenol
2&4-Methylphenol	2.9	NT	NA	NA	41,000	No	
4,6-Dichloro-o-cresol	5.5	NT	NA	NA	2,500 ⁵	No	2,4-Dichlorophenol
4-Chloro-3-Methylphenol	4.7	ND	NA	NA	82,000	No	
4-Chloro-o-cresol	12	NT	NA	NA	2,500 ⁵	No	2,4-Dichlorophenol
4-Chlorophenol	3.6	NT	NA	NA	5,800 ⁷	No	2-Chlorophenol
Acenaphthene	ND	0.18	19,000	520,000		No	
Anthracene	ND	0.21	93,000	>Csat		No	
Benzo(a)anthracene	ND	1.3	21	590		No	
Benzo(b)fluoranthene	2.6	2.3	21	590		No	
Benzo(g,h,i)perylene	ND	1	2.1 ⁸	59 ⁸		No	Dibenzo(a,h)anthracene
Benzo(k)fluoranthene	ND	2	210	5,900		No	
bis(2-Ethylhexyl)phthalate	29	ND	1,200	33,000		No	
Chrysene	11	2.1	2,100	57,000		No	

Table 1

Excavation/Construction Worker Scenario Screening
 Rhone-Poulenc Off-Property Human Health Risk Assessment

Rhone-Poulenc Constituent of Interest	Maximum East Doane Lake Sediment Detection ¹	Soil Sample Results for RP-26 at 35 to 37 ft bgs ¹	RBC _{soil} ⁻ Construction Worker	RBC _{soil} ⁻ Excavation Worker	EPA RSL-Industrial Soil	SLV Exceed (Y/N)	Surrogate
Dibenzo(a,h)anthracene	ND	0.29	2.1	59		No	
di-n-Octyl Phthalate	2	ND	NA	NA	8,200	No	
Fluoranthene	ND	1.7	8,900	250,000		No	
Fluorene	ND	0.29	12,000	340,000		No	
Hexachlorobenzene	ND	0.36	12	330		No	
Indeno(1,2,3-cd)pyrene	ND	0.87	21	590		No	
Pentachlorophenol	0.93	ND	31	860		No	
Phenanthrene	ND	1.2	8,900 ⁹	250,000 ⁹		No	Fluoranthene
Phenol	8.5	ND	NA	NA	2,500	No	
Pyrene	0.93	2.1	6,700	190,000		No	
Chlorinated Herbicides (mg/kg)							
2,4,5-T	1.6	0.55	NA	NA	8,200	No	
2,4,5-TP (Silvex)	0.31	0.15	NA	NA	6,600	No	
2,4-D	5.9	2.3	2,400	66,000		No	
2,4-DB	3.1	0.91	NA	NA	6,600	No	
Bromoxynill	0.072	ND	NA	NA	16,000	No	
Dalapon	0.61	ND	NA	NA	25,000	No	
Dichloroprop	1.2	0.43	2,400 ¹⁰	66,000 ¹⁰		No	2,4-D
MCPA	61	ND	120	3,300		No	
MCP	61	ND	NA	NA	820	No	
Organochlorine Insecticides (mg/kg)							
4,4'-DDD	28	0.0756	83	2,300		No	
4,4'-DDE	2	0.0192	58	1,600		No	
4,4'-DDT	0.12	0.0019	58	1,600		No	
Aldrin	0.14	ND	0.95	26		No	
Dieldrin	0.13	0.00175	1	29		No	
alpha-Chlordane	NT	0.00105	55	1,500		No	
cis-Nonachlor	NT	0.000187	55 ¹¹	1,500 ¹¹		No	alpha-Chlordane
Endrin	0.098	0.000068	71	2,000		No	
Hexachlorobenzene	5.6	0.0334	12	330		No	
gamma-Chlorodane	NT	0.00173	55	1,500		No	
trans-Nonachlor	NT	0.000511	55 ¹¹	1,500 ¹¹		No	alpha-Chlordane
PCDD/PCDF² (mg/kg)							
2,3,7,8-TCDD	4.00E-02	2.93E-01	1.50E-04	4.20E-03		Yes	
1,2,3,7,8-PeCDD	3.30E-04	2.77E-04	1.50E-04	4.20E-03		Yes	
1,2,3,4,7,8-HxCDD	5.60E-05	4.72E-05	1.50E-03	4.20E-02		No	
1,2,3,6,7,8-HxCDD	2.10E-04	1.71E-04	1.50E-03	4.20E-02		No	
1,2,3,7,8,9-HxCDD	1.70E-04	7.98E-05	1.50E-03	4.20E-02		No	
1,2,3,4,6,7,8-HpCDD	2.40E-03	1.38E-03	1.50E-02	4.20E-01		No	
OCDD	3.00E-02	1.44E-02	5.00E-02	1.40E+00		No	
2,3,7,8-TCDF	1.20E-03	1.88E-03	1.50E-03	4.20E-02		Yes	
1,2,3,7,8-PeCDF	6.60E-04	ND	5.00E-03	1.40E-01		No	
2,3,4,7,8-PeCDF	6.60E-04	9.89E-04	5.00E-04	1.40E-02		No	
1,2,3,4,7,8-HxCDF	3.80E-04	3.28E-04	1.50E-03	4.20E-02		No	
1,2,3,6,7,8-HxCDF	2.50E-04	2.52E-04	1.50E-03	4.20E-02		No	
2,3,4,6,7,8-HxCDF	1.10E-04	3.47E-04	1.50E-03	4.20E-02		No	
1,2,3,4,6,7,8,9-HpCDF	7.30E-04	3.58E-03	1.50E-02	4.20E-01		No	
1,2,3,4,7,8,9-HpCDF	6.10E-05	2.12E-04	1.50E-02	4.20E-01		No	
OCDF	1.60E-03	9.46E-03	5.00E-01	1.40E+01		No	
Petroleum Hydrocarbons (mg/kg)							
Diesel-Range Organics	500	2,270	4,600	>Max		No	
Residual Range Organics	NT	2,320	4,600 ¹²	>Max ¹²		No	Diesel-Range Organics

Table 1
Excavation/Construction Worker Scenario Screening
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Rhone-Poulenc Constituent of Interest	Maximum East Doane Lake Sediment Detection ¹	Soil Sample Results for RP-26 at 35 to 37 ft bgs ¹	RBC _{soil} ⁻ Construction Worker	RBC _{soil} ⁻ Excavation Worker	EPA RSL-Industrial Soil	SLV Exceed (Y/N)	Surrogate
Total Petroleum Hydrocarbons	4,700	NT	4,600 ¹²	>Max ¹²		No	Diesel-Range Organics
Total Metals (mg/kg)							
Arsenic	1,340	9.44	13	370		Yes	
Barium	NA	193	60,000	>Max		No	
Cadmium	67.7	ND	150	4,300		No	
Chromium	228	105	460,000	>Max		No	
Copper	NA	63.2	12,000	340,000		No	
Lead	117,00	81.5	800	800		Yes	
Nickel	NA	77.1	6,100	170,000		No	
Manganese	NA	740	7,200	200,000		No	
Mercury	7.1	0.46	93	2,600		No	
Silver	NA	0.725	1,500	43,000		No	
PCBs (mg/kg)							
Total PCBs	7.3	NT	4.4	120		Yes	

¹ Data screened based on Table C-13 of the May 22, 2014 Initial Evaluation of Former Doane Lake Sediment submittal from StarLink.

² Only individual congeners were screened. Total TEQ was not screened for each sample.

³ 1,2-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene

⁴ Isopropylbenzene used as surrogate for 4-Isopropyltoluene

⁵ 2,4-Dichlorophenol used as surrogate for 2,6-Dichlorophenol, 4,6-Dichloro-o-cresol, 4-Chloro-o-cresol

⁶ 2,4-Dinitrophenol used as surrogate for 4-Nitrophenol

⁷ 2-Chlorophenol used as surrogate for 4-Chlorophenol.

⁸ Dibenzo(a,h)anthracene used as surrogate for Benzo(g,h,i)perylene

⁹ Fluoranthene used as surrogate for Phenanthrene

¹⁰ 2,4-D used as surrogate for Dichloroprop

¹¹ alpha-Chlordane used as surrogate for cis-Nonachlor and trans-Nonachlor

¹² Diesel-Range Organics used as surrogate for Residual Range Organics and Total Petroleum Hydrocarbons

>Max -The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.

>Csat -This soil RBC exceeds the limit of three-phase equilibrium partitioning